INVESTIGATOR'S ANNUAL REPORT

National Park Service

All or some of the information provided may be available to the public

Reporting Year: 1997	**Park:** Shenandoah NP
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Permit#:
SHEN1997AUKU

Park-assigned Study Id. #:
unknown

Project Title:
A Low Flow/High Flow Comparison Of Dissolved Organic Matter Concentrations And Bacterial Growth In An Appalachian Stream (N-229)

Permit Start Date: Jan 01, 1998	**Permit Expiration Date** Jan 01, 1998
Study Start Date: Jan 01, 1997	**Study End Date** Jan 01, 1998

Study Status:
Completed

Activity Type:
Research

Subject/Discipline:
Water Resources

Objectives:
Measure the loading of dissolved organic carbon and dissolved organic nitrogen to headwater streams in Shenandoah National Park. In a single stream, Paine Run, compare baseflow and stormflow concentrations of dissolved organics, and compare the growth of stream bacteria on baseflow and stormflow organic matter.

Findings and Status:
Status: Field portion of (Masters) project is nearing completion. Sample analysis is scheduled to be completed as of 3/98, and the thesis/manuscript should be completed as of 7/98.;Preliminary results: Dissolved organic matter (DOM) fluxes during storms constitute a large portion of annual organic matter export from headwater catchments, and may affect bacterial growth rates. DOC increased dramatically during storm events in Paine Run, a small stream in a forested mountainous catchment in Shenandoah National Park, Virginia. Concentrations were observed up to four times higher than baseflow values of 70+/-15 uM DOC. DON showed a similar pattern, maintaining a C:N value not significantly different than baseflow ratios. Nitrate concentrations also increased during storms, accounting for 80-90% of dissolved N flux via the stream, while DON accounted for 10-15%. The few (2-4) largest events during the course of the year accounted for the majority of the streamwater flux of N and DOC. When normalized to initial DOC concentration, bacterial growth rates on stormflow DOM were equivalent or decreased relative to growth on baseflow DOM in standardized bioassays using stream-derived inoculum. Storms play a critical role in determining stream DOM concentrations, and fluxes. However, in Paine Run the storm-introduced DOM is similar to baseflow DOM in C:N and in its ability to sponsor bacterial growth, suggesting that regardless of flow path the stream organic matter is relatively consistent in quality.

For this study, were one or more specimens collected and removed from the park but not destroyed during analyses?
No

Funding provided this reporting year by NPS:	**Funding provided this reporting year by other sources:**

0	0
Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college	
Full name of college or university:	**Annual funding provided by NPS to university or college this reporting year:**
n/a	0